REMARKS

Claims 1, 3, 4, 6-8, 15, 16, 18, and 20-23 are pending in the application upon entry of the amendments and new claims. Claim 1 has been amended to disclaim the cited art. Claims 22 and 23 have been added to further describe certain aspects of the invention. Favorable reconsideration in light of the amendments, the new claim, the enclosed Rule 132 Declaration, and the remarks which follow is respectfully requested.

Indefiniteness Rejection

Claims 1, 3, 4, 6-8, 15, 16, 18, 20 and 21 stand rejected under 35 U.S.C. § 112, second paragraph, because. Claim 1 has been amended to more clearly define the subject matter of certain aspects of the invention. Accordingly, withdrawal of the rejection is respectfully requested.

Anticipation Rejection or Obviousness Rejection of Claims 1, 3, 6-8, 15, 18, 20, and 21

Claims 1, 3, 6-8, 15, 18, 20, and 21 stand rejected under 35 U.S.C. §102(e) or, in the alternative, under 35 U.S.C. §103(a) over Weidman (US Patent No. 6,806,203). Weidman relates to a method of forming a dual damascene structure using an amorphous silicon hard mask.

The Office Action contends on page 2 that "TMCTS is sufficiently small such that at least some of the TMCTS used in forming layer 122 of Weidman et al. to come into contact with the inside surface of the porous silica layer." The Office Action further contends on page 2 that "[e]ven if some molecular weight [of TMCTS] increase were expected, one would still expect that at least some of the TMCTS would come into contact with the silica pores before molecular weight increase started."

It is submitted that the contention goes against the chemical reaction theory of TMCTS. First of all, Weidman teaches a **TMCTS layer** 122 formed over a silica film 116 by a plasma process. *See* column 8, lines 33-36 of

Weidman. In Weidman, the TMSTS layer 122 is deposited over the upper surface of the silica film 116, and TMCTS cannot come into contact an inside surface of a pore of the silica film 116.

One skilled in the art would readily understand that when the TMCTS layer 122 is deposited by the plasma process, the molecular weight of TMCTS is significantly increased. TMCTS can easily polymerize in such a process **before reaching the surface of the silica film 116**, and therefore, even a portion of TMCTS cannot come into contact with the inside surface of the porous silica layer.

In this connection, many documents show that TMCTS is so susceptible to polymerization that it polymerizes before reaching a surface of a substrate in a deposition process. For example, US Patent 7,531, 590 state that "TMCTS . . . has the ability to undergo ring opening polymerization" and that "it is necessary to find a means to stabilize TMCTS to ensure that the product does not polymerize during transport from the chemical supplier to the end-use process, even after exposure to various conditions." *See* paragraphs [0005] and [0006] of US Patent 7,531, 590. US Patent 7,423,166 states that "present deposition processes, specifically with respect to TMCTS suffer from irreproducible delivery due to pre-mature polymerization of the TMCTS precursor within the delivery lines and process hardware." *See* paragraph [0009] of US Patent 7,423,166. US Patent 7,217,769 states that "[a] plasma process with TMCTS creates a 'primer' coating of polymeric TMCTS." US Patent 7,030,168 states that "TMCTS polymerizes in delivery lines at elevated temperatures, usually about 120 °C., with potentially catastrophic consequences to the deposition process and associated equipment."

Even assuming that the silica film 116 has a pore size between 2 and 50 nm and TMCTS has a diameter of .87 nm, Weidman fails to teach or suggest that an inside surface of pore of the silica film 116 is brought into contact with TMCTS. This is because 1) Weidman teaches deposition of TMCTS layer 122 over the silica film 116 and 2) TMCTS is so susceptible to polymerization that it polymerizes before reaching the surface of the silica film 116 in the plasma

process. Since Weidman teaches polymerizing TMCTS before it reaches the surface of silica film 116 to deposit a TMCTS layer 122 over the silica film 116, Weidman teaches away from the subject invention.

Since Weidman fails to disclose, teach, or suggest all the features of claim 1, Weidman cannot anticipate the claims and cannot make the claims obvious. Accordingly, withdrawal rejection is respectfully requested.

Rule 132 Declaration

Even if a *prima facie* case of obviousness is established, which is not conceded, the enclosed Rule 132 Declaration reports experimental data which demonstrates that the claimed method for modifying a porous film has superior and unexpected properties compared to Weidman's method. In particular, the Rule 132 Declaration shows that the modified porous film obtained in the claimed method maintains a monolayer structure. Contrary to the claimed method, Weidman teaches deposition of a TMCTS layer 122 **over** a silica film 116.

Weidman therefore fails to teach or suggest ALL of the features of claim 1. Withdrawal of the rejection is thus respectfully requested.

Obviousness Rejection of Claims 4 and 16

Claims 4 and 16 have been rejected under 35 U.S.C. §103(a) over Weidman.

As discussed above, Weidman fails to teach or suggest all the features of claim 1. In particular, Weidman fails to teach or suggest that an inside surface of a pore of the porous film is brought into contact with an organic silicon compound, the organic silicon compound is a cyclic siloxane and the molecular weight of the cyclic siloxane is not more than 900. Weidman teaches polymerizing TMCTS before it reaches the surface of silica film 116 to deposit TMCTS layer 122 over the silica film 116. Claims 4 and 16, directly and indirectly, depend on claim 1. Consequently, Weidman cannot make claims 4 and 16 obvious. Accordingly, withdrawal rejection is respectfully requested.

New Claims 22 and 23

Claim 21 recites "the method for modifying a porous film according to claim 1, further comprising adding water to the porous film." Claim 23 recites "the water is added before contacting the outer surface of the porous film and an inside surface of a pore of the porous film with the organic silicon compound."

By adding water to the porous film during the modification process, the number of silanol groups is increased by hydrolysis so that the organic silicon compound can easily react with the silanol groups, thereby improving the hydrophobic property and the mechanical strength of the modified porous film. *See* page 23, lines 23-26 of the subject specification. Weidman fails to disclose, teach, or suggest such claim features.

Petition for Extension of Time

A request for a one month extension of time is hereby made. Payment is being made through the EFS electronic filing system.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Respectfully submitted,

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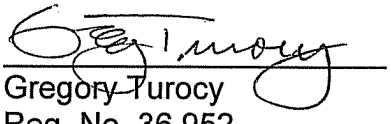

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